

## **FACILITY CONDITION ASSESSMENT REPORT**

Per our contracted scope of work, the Project Team performed the general assessment of the Reading Naval & Marine Corps Reserve Center on March 4, 2009, including onsite review by the following sub-consultants/disciplines:

- Swiger Consulting, Inc. (SCI) – prime consultant
- TKS Architects, Inc. (TKS) – architectural
- C.S. Davidson, Inc. (CSD) – structural and civil/site
- Randy Paul & Associates, inc. (RPA) - mechanical, electrical and plumbing
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The following report contains building descriptions as well as our findings, conclusions and recommendations.

### **I. GENERAL FACILITY DESCRIPTION**

As noted in the “Cultural Resources Survey and Assessment of Naval Reserve Centers” (CRSA – attached in Appendix A) prepared for the Reading Naval & Marine Corps Reserve Center, the facility is located on a 7-acre parcel in southwest Reading, Berks County, Pennsylvania, and it contains five building-type structures as follows:

#### **Property Description**

The Reading Naval & Marine Corps Reserve Center is located at 615 Kenhorst Blvd. in the western quadrant of the City of Reading, Berks County, Pennsylvania. The property 7.05-acre property is physically located at the northeastern corner of the intersections of North Kenhorst Blvd. and Pershing Blvd. The property is located with the City’s R-3 Residential Zoning District.

The site is comprised of five individual buildings known as the Reserve Training Building, a Paint Locker, the Auto Vehicle Shop, a Garage and the General Storage “Howitzer” Shed. There are two large asphalt parking lots on the property, one located in the northwestern corner and adjoining Kenhorst Blvd, and the second in the eastern corner and accessed from Pershing Blvd. The northern quarter of the site another asphalt surfaced area surrounding the Howitzer Shed. Five access driveways serve the site; the main vehicle entrance to the building’s front from Kenhorst Blvd, three access drives to the parking lots and a driveway access from Pershing Blvd. that extends past the main building area to the property rear. This access appears to be in general alignment with Margaret Street on either side of the parcel.

The facility is served by public water and sewer with connections to the utility mains located in the adjacent streets. Natural gas is provided also from the services located within the public streets. Electric, telephone, cable television serve the property by overhead lines from existing poles located adjacent to the surrounding streets. Large overhead electric transmission lines bisect the property on a general east-west line behind the Reserve Training Building. All utilities appear through visual inspection to be in good condition and no deficiencies were noted regarding their function or service capacity.

The site generally slopes from south to north, with stormwater runoff generally conveyed away from the building and to the property's lowest elevation adjacent to Margaret Street along the northern property line. An existing at-grade stormwater basin is located at the northern corner of the Kenhorst Blvd parking lot.

### **Reserve Training Building**

Based on our review of the provided 1988 Renovation Project (1988RP) drawings as well as our site visit, this 36,000 SF building – originally constructed in 1959 - was determined to consist of two floors: the lower Ground Floor; and the upper First Floor (see attached Floor Plans in Appendix B, and Photos G-1 and G-2 in Appendix C). With the exception of the southwest building wing where only the upper level is present, both floor levels are present within the entire building footprint. The site's gently rolling topography means that the exterior grades vary around the large perimeter of this building, and certain portions of each floor are grade-accessible depending on the location of interest (see attached Exterior Elevations in Appendix B).

### **Architectural Description**

The Reserve Training Building (RTB) consists of two (2) levels, comprising approximately 24,700 square feet in total. The facility plan is roughly an "F" shape with the main entrance slightly off center in the leg of the "F". The plan consists of double loaded corridors that are centered in each appendage, or wing, of the facility. The corridors are six (6) feet wide with concrete masonry walls (see Photo A-1). Corridor ceilings are suspended, acoustical lay-in panels in good condition. Corridor flooring is 12" x 12" vinyl tile in good condition with some minor cracking apparent at intersections with the structural column footing pads. An unusual condition exists at the corridor walls where the structural column footing pads project beyond the surface of the walls, and could create a tripping hazard, should high corridor traffic occur. Additionally, these pads could be an obstruction for wheelchair travel (see Photo A-2).

The majority of the rooms are approximately 375 square feet and of a rectangular shape. These rooms would not qualify as reimbursable classroom space by the Pennsylvania Department of Education, which requires classrooms to be a minimum of 660 square feet.

The rooms are carpeted with vinyl cove base and have suspended, lay-in acoustical ceilings. It was discovered that these ceilings, which were installed in the 1988 renovation, were suspended approximately 30 inches below the original 12" x 12" direct glued ceilings (see Photo A-3).

Corridor doors do not meet current codes. The original hardware is a knob, rather than a lever style, and the vision glass exceeds current allowable sizes. Additionally, it did not appear that the glass was tempered, as no seal was apparent (see Photo A-4). Several of the corridor doors are louvered, which suggest that the existing mechanical system does not meet current codes in terms of corridor pressure and smoke control (see Photo A-5).

The corridors contain skylights, which provide nice levels of daylighting, however, many were found to be in need of repair or replacement, evidenced by obvious leaking and moisture penetration (see Photo A-6).

A large multi-purpose room (#234) is located in the rear of the facility, just off center of the plan. This space is constructed of large laminated wood construction, with sloped metal deck roofing (see Photo A-7). The flooring is striped for basketball, and baskets with rectangular

backboards are suspended at each end. A small mezzanine is located at one end (see Photo A-8). The ceiling in this space is experiencing severe paint chipping, suggesting either a misapplication of the paint or moisture issues (see Photo A-9).

While the acoustical ceilings throughout the main floor of the facility are in good shape, the same is not true of the basement (ground) floor. The ceiling tiles throughout the level are bowed, and demonstrate either a humidity or moisture condition (see Photo A-10). These ceiling tiles will need to be replaced. The ground floor level, which is below grade to varying degrees, shows evidence of moisture penetration at the retaining walls in several locations (see Photo A-11).

Bathroom fixtures are, for the most part, original and no longer meet code. Floor mounted urinals will need to be replaced, and sinks and hardware need to meet current ADA codes (see Photo A-12).

Room 106, a large room currently used primarily for storage and weightlifting, appears to have originally been a vehicle maintenance space. This room has large expanses of fixed glazing along two (2) sides. This glazing is single pane set in non-thermally broken aluminum storefront mullions (see Photos A-13 & A-14).

The exterior of the facility is brick with large, square fixed windows with an operable awning light at the bottom, set into dryvit panels. These windows and dryvit panels were part of the 1988 renovations which replaced continuous banded windows (see Photos A-15 & A-16). The exterior materials and windows are in very good condition.

The roof of this building is a ballasted rubber roof with an approximate age of 20 years. The roof is scheduled for overall repairs in the spring of 2009, but given the age, a total replacement is recommended.

### Structural Description

Based on our review of the 1988RP as well as our site observations, it appears that the structural framing system consists of conventionally-reinforced, cast-in-place concrete floor and roof slabs and beams supported by structural steel columns (wide flanges and hollow sections). An abundance of non-load-bearing CMU shear walls are used to laterally stabilize the structure.

The only exceptions to this type of construction are the weight room and gymnasium “wings”, both having roof systems supported by glue-laminated wood beams. Cast-in-place concrete retaining walls are present along the entire perimeter of the basement, and, per the CRSA, this structure has a shallow concrete (spread footing) foundation system.

### Mechanical System Description

The original 1959 building’s mechanical systems have gone through various mechanical upgrades and renovations through it’s history. Original system was installed in 1959 and consisted of an oil fired hot water heating system with base mounted hot water circulating pumps, (Photo H-11) wall finned radiation (Photo H-1, H-17, H-22, H-24) and pneumatic temperature control (PhotoH-10). In 1988 a major renovation was provided for this facility. New hot water piping distribution was installed and reconnected to the existing wall fin radiation. System included a new hot water circulating pumps, (Photo H-8) expansion system (Photo H-14) and converting existing hot water oil fired boiler to gas. In 1994 the existing hot water boiler (Photo H-6) was replaced with a new gas fired hot water boiler. The most current renovation in 2001 included the addition of air conditioning, D.D.C. control systems and hot water duct coils and associated piping systems.

A visual inspection of all existing mechanical systems was conducted and recorded. The existing mechanical systems of the Reserve Training Building consists of original 1959 hot water wall fin radiation heating with associated hot water piping distribution renovated in 1988. The current air conditioning system was added to the building in 2001 and consists of the following:

Packaged roof-top air conditioning with gas fired heating (RTU-1, 1½ ton, RTU-2, 1½ ton, RTU-3, 4 ton, RTU-4, 5 ton, RTU-5 12½ ton, RTU-6, 8 ½ ton, RTU-7, 3 ton RTU-8, 2 ton) (Photo H-31, H-33, H-34, H-35, H-36) and insulated metal duct distribution serving the first floor and basement west side class rooms. Split-system air conditioning with hot water coils, associated hot water piping distribution, outdoor condensing units, (A/C-1, 3 ton, AC-2, 2½ ton, AC-3, 1½ ton, AC-4, 6½ ton, AC-4A, 6½ ton, AC-5, 1½ ton, AC-6, 1½ ton)(Photo H-21, H-23) and insulated metal duct distribution serving the remaining classrooms. RTU-5 and RTU-6 system included a (VVT) variable volume temperature control system. Ventilation air is currently introduced into the building via packaged roof-top unit outside air intakes and split-system ducted outside air intake louvered openings. Also, in 2001, corridor walls were provided with transfer air grilles and fire dampers at transfer openings throughout the building.

In 1988 roof-top relief air hoods were added throughout the building providing general building pressure relief. (Photo H-35) The toilet areas are currently served by roof-top mounted exhaust fans and associated exhaust ductwork also renovated in 1988. All systems are currently controlled via D.D.C. (Direct Digital Control) system installed in 2001. (Photo H-25, H-29)

Site inspection revealed one abandoned fuel oil transfer pump and associated accessories located within the boiler room. (Photo H-12)\_ In 1988 a 3” gas service and piping distribution was added to the building to facilitate the oil to gas boiler conversion. Later in 2001, the gas service was expanded to serve the new gas fired packaged air conditioning units. (Photo H-33)

The hot water heating is currently being generated by one gas fired cast iron sectional hot water boiler installed in 1994. (Photo H-6) In 1988, all boiler room piping ,including expansion tank, valves, air separator etc. were renovated with the exception of P-1 and P-2 pumps and associated chemical feed pot still vintage 1959. (Photo H-11)

The existing hot water boiler. insulated flue is of conventional design extending and connecting to the existing chimney. Boiler make-up air is provided via a tempered power make-up air fan system(Photo H-13) and conventional outside air intake louver interlocked with boiler. (Photo H-16) Four hot water distribution pumps currently serve the building, two base mounted hot water pumps P-1 & P-2 installed 1959 (Photo H-11) and two inline mounted hot water pumps P-3 & P-4 installed 2001. (Photo H-8) All pumps are located within the boiler room. The site inspection revealed one abandoned pneumatic air compressor, dryer, main pneumatic control panel installed 1959. (Photo H-10)

The Gun Room is currently served by two hot water horizontal unit heaters(Photo H-18, H-19) and wall fin hot water heaters providing heating only. Ventilation via panel type thru the wall exhaust fans and louvered fresh air intakes installed in 1959. (Photo H-20)

The Gym is currently served by two ceiling mounted hot water horizontal unit ventilators for heating and ventilation with wall fin hot water heaters providing supplemental perimeter heating. (Photo H-24) Roof-top gravity ventilator providing pressure relief installed in 1959 cooling is provided via two ceiling mounted split system horizontal air handlers with DX cooling coils and associated outdoor pad mounted condensing units installed in 2001. (Photo H-23)

The first floor computer and telecommunication room is currently being served by a floor mounted room environmental control unit with outdoor remote condenser unit installed in 2001.

#### Electrical System Description

Throughout the life of this building, various upgrades have been made to the original dual voltage electric service, and to the building lighting.

During the 1988 Renovation Project, new panel feeders were installed for single phase 'LP' lighting and power panels throughout the building, fed from the switchboard's 1200 AMP single phase section. A zoned, manual fire alarm system was also installed at this time. (Photo E-1) High pressure sodium high-bay lights were also installed in the Gymnasium at this time. (Photo E-2) Exit signs and wall-mounted emergency battery lighting units were installed as part of this renovation. (Photo E-3)

The Gun Room is lit with suspended incandescent reflector lights, installed before the 1988 renovation. (Photo E-4) In addition, disconnect switches and one panel board, which serve boiler room equipment, appear to have been installed at the time the building was constructed.

In 2001, major electrical revisions were made to electrical distribution system. A new 2000 AMP, 120/208V, 3 phase service was installed, to replace a previous dual voltage service which used multiple service disconnects. (Photo E-5) Step-up transformers and additional 480V distribution panels were also added at this time to serve existing 480V equipment. (Photo E-6) Existing panels were re-connected to this new system.

During these renovations, power to new roof-top HVAC units and split system A/C units were provided, using new panel boards located in the Electrical Room. (Photo E-7)

Lighting fixtures which use T8 fluorescent lamps and electronic ballasts were installed as part of the 2001 project. In office areas, parabolic fixtures were used. (Photo E-8)

According to the construction documents for the 2001 renovation, emergency lighting in corridors is provided by emergency lighting ballasts within the fluorescent fixtures, though we were unable to field verify their existence. Wall-mounted emergency battery lighting units remain from the previous remodel. (Photo E-9)

#### Plumbing System Description

The existing plumbing systems of the Reserve Training Building consist of original 1959 piping and fixtures with the exception of a minor renovation of a few toilet and lavatory fixtures during the 1988 renovation. (Photo P-1, P-3, P-4)

The domestic water service to the building consisted of a 4" water main line entering boiler room. The visual inspection revealed that the domestic central hot water system was abandoned except for a small 40 gallon electric hot water heater installed for the break room. (Photo P-2)

The 1988 Renovation Project appears to have generally involved select demolition, architectural improvements and programming upgrades, and energy conservation improvements within the building footprint, as well as site grading improvements (including new site retaining walls) immediately outside of the structure.

## **Paint Locker**

This single-story, at-grade, 100 SF structure is comprised of load-bearing concrete masonry units (clad with exterior brick veneer) which support a wood-truss-framed gabled roof system (Photo G-3).

The paint locker building is a facility of approximately 100 square feet, constructed of brick and block masonry bearing construction with a gabled, shingle clad roof. It appears in good condition (see Photo A-17). There are no mechanical, Electrical or Plumbing systems present in this structure.

## **Auto Vehicle Shop**

### **Architectural Description**

This facility consists of two (2) distinct sections; a 2,300 SF high bay section consisting of four (4) garage bays with clerestory windows on both sides and a 1,000 SF single bay with entrance door (see Photo A-18, and G-4 through G-6)). The facility has a brick veneer exterior and appears in very good condition. The garage doors are in very good condition and operate well (see Photo A-19). All doors, interior and exterior, lack lever type hardware. The toilet room is large enough to accommodate ADA code features, but is currently also serving as a storage room. There is a steel construction mezzanine in the larger four (4) bay structure that spans one (1) structural bay (see Photo A-20). This facility appears to be in very good overall condition.

### **Structural Description**

The structure is comprised of load-bearing concrete masonry units (clad with exterior brick veneer as well as standing seam metal panel), steel columns, and structural steel beam and open-web joist roof framing, all supported by a shallow concrete (spread footing) foundation system.

### **Mechanical System Description**

The existing mechanicals of the Auto Vehicle Shop consist of original 1988 ceiling mounted gas fired horizontal unit heaters with flue extending through roof within the High Bay areas. (Photo H-3)

Toilet Room heating provided by a vertical floor mounted gas fired unit heater installed in 2001. (Photo H-4) Toilet exhaust provided by a roof-top mounted exhaust fan and associated exhaust ductwork installed in 1988.

Vehicle exhaust consist of direct connecting (reel type) self-contained exhaust units including ceiling mounted fan terminal with drop down flexible hose reels vented directly up through roof. (Photo H-3) Make-up air for this system is provided via roof-top intake hood and duct distribution system installed in 1988. In 1988 a 2" gas service and piping distribution was provided to facilitate the gas fired heating equipment.

### **Electrical System Description**

This building is served with a 200A, 120/208V single phase electrical service. (Photo E-10) This equipment varies in age and condition. The building is lit with high pressure sodium high-bay light fixtures that use metal reflectors. (Photo E-11)

### Plumbing System Description

The existing plumbing systems of the Auto Vehicle Shop consist of original 1988 piping and fixtures. The domestic water service consists of a 1" water main line entering the garage. Hot water heating is provided via 1, 40 gallon gas fired hot water heater. (Photo P-5)

### Garage

This single-story, at-grade, 525 SF structure contains two vehicle service/storage bays and is comprised of load-bearing concrete masonry units (clad with exterior brick veneer), and steel framing supporting a flat roof system (Photo G-7). Per the CRSA, this structure has a shallow concrete (spread footing) foundation system.

The roof is flat and slopes from front to back. There are two (2) garage doors in very good operating condition. There are opaque vision panels above the garage door, provided an acceptable level of daylighting. The facility appears to be in very good condition (see Photo A-17).

There are no mechanical or plumbing systems present in this building and it does not have a separate panel board serving it. It has a few incandescent lights.

### General Storage (i.e., "Howitzer") Shed

Constructed in 1991, this one-story, 4,700 SF structure contains six vehicle service/storage bays and is comprised of standard pre-engineered metal building framing (clad with standing seam metal panels) supported by a shallow concrete (spread footing) foundation system. See Photo G-8.

This structure appears to be the newest construction on the property, built in 1991. It is constructed of light gauge steel with corrugated metal panel exterior. It has six (6) garage bays (see Photo A-21). The roof is a flat, corrugated metal panel, similar to the wall panel system and slopes from front to back. The building is not insulated (see Photo A-22). The garage doors are in excellent operable condition. This facility is in excellent overall condition.

This building is served with a 100A, single phase electrical service. (Photo E-12) Lighting is provided by suspended fluorescent lights that use T12 high output lamps. (Photo E-13) A minimal amount of receptacles are provided for general use. There are no mechanical systems present in this structure.

## **II. INSPECTION PROCEDURES**

In preparation for our site visit, the team reviewed all available documentation of the facility, especially the 1988RP and CSRA documents. Our site visit consisted of visual observations of readily available and accessible areas, with no physical or material testing being performed. Documentation of our inspection was performed via hand-written field notes and photographs.

### **III. INSPECTION FINDINGS & CONCLUSIONS**

#### **Reserve Training Building**

##### **Architectural Findings & Conclusions**

As noted in the description section of this report, this building is primarily constructed of very durable cast-in-place concrete floor framing, concrete masonry walls, and painted structural steel columns. This type of construction is considered extremely redundant in that the masonry walls assist the columns in supporting the vertical loads, and also prevent the columns from experiencing bending forces caused by lateral loads (e.g., wind or seismic). This redundancy is most likely the result of design practices and requirements for military facilities in the late 1950's (i.e., during the Cold War); in fact, it is quite probable that this structure – especially its Ground Floor – was specified as a Civil Defense shelter. Given the inherent strength and durability of its construction, as well as its obvious good maintenance and the fact that it was extensively renovated in 1988, it is not surprising that there are so few noted structural deficiencies. These deficiencies include minor hairline cracks in isolated locations of the masonry walls, and peeling paint from the steel deck roof in the gymnasium, neither being serious in nature. Otherwise, there are no obvious indications of overstressed or deteriorated elements, nor was there any evidence of groundwater infiltration through the basement walls.

##### **Structural Findings & Conclusions**

As noted in the description section of this report, this building is primarily constructed of very durable cast-in-place concrete floor framing, concrete masonry walls, and painted structural steel columns (Photos S-1, S-2). This type of construction is considered extremely redundant in that the masonry walls assist the columns in supporting the vertical loads, and also prevent the columns from experiencing bending forces caused by lateral loads (e.g., wind or seismic). This redundancy is most likely the result of design practices and requirements for military facilities in the late 1950's (i.e., during the Cold War); in fact, it is quite probable that this structure – especially its Ground Floor – was specified as a Civil Defense shelter. Given the inherent strength and durability of its construction, as well as its obvious good maintenance and the fact that it was extensively renovated in 1988, it is not surprising that there are so few noted structural deficiencies. These deficiencies include minor hairline cracks in isolated locations of the masonry walls (Photos S-3, S-4), and peeling paint from the steel deck roof in the gymnasium (Photo S-5), neither being serious in nature. Otherwise, there are no obvious indications of overstressed or deteriorated elements, nor was there any evidence of groundwater infiltration through the basement walls.

##### **Mechanical Findings & Conclusions**

In general the mechanical systems were found in good condition and appeared to function properly during our site inspection. The site inspection did reveal a few items that were found to be at the end of their normal life expectancy as follows:

Base mounted hot water pumps P-1 and P-2 and associated chemical feed pot system located within Boiler Room, (Photo H-11) horizontal unit heaters and panel wall exhaust fans located with the Gun Room, (Photo H-18, H-19, H-20) ceiling mounted hot water horizontal unit ventilators and roof-top pressure relief hood located within the Gym.

Also found were systems abandoned in place as follows:



Fuel oil transfer pump and associated fuel gauge, filter and piping. (Note – system no longer needed for boiler operation) located within Boiler Room. (Photo H-12) Pneumatic control system and compressor also located within Boiler Room. (Photo H-10)

### Electrical Findings & Conclusions

Generally, the electrical systems and lighting throughout the building are in good condition and have been well maintained.

The switchboard, transformers and other distribution equipment located in the Electrical Room are relatively new, and in good condition. (Photo E-14)

These =LP= lighting and power panels located throughout the building were installed prior to 1988, but have been well maintained and are in good condition. (Photo E-15)

The fluorescent lights, installed as part of the 2001 renovation are energy efficient, and are appropriate for use in a future business or educational occupancy. The high pressure sodium lights in the Gym are reaching the end of their useful life.

The wall-mounted emergency battery lighting units are in poor condition. If the integral emergency batteries were not installed as in the corridor lights, as shown on the 2001 plans, then the amount of emergency lighting provided by the wall-mounted units will be inadequate to meet current code-mandated lighting levels.

The fire alarm system is a zoned system, but only half of the available zones are currently in use.

The incandescent lights in the Gun Room provide a minimal amount of light which may not be adequate to support usage of that space during evening hours.

The disconnect switches and original panel board, which serve boiler room equipment, have exceeded their useful life. The manufacturer of this equipment is no longer in business so replacement parts for this equipment are scarce and may be expensive. (Photo E-16)

### Plumbing Findings & Conclusions

In general the plumbing systems were found functional but in poor condition. During the 1988 renovation, a few toilets and lavatories were replaced throughout the building. The evaluation revealed that the plumbing system is over its normal life expectancy. (Photo P-1, P-2, P-3, P-4, P-7)

### **Paint Locker**

### Architectural Findings & Conclusions

This building is in good structural condition, once again due to the fact that it is constructed of durable masonry materials. There is evidence of insect infiltration (i.e., a wasp nest in the southeast corner of the roof framing) due to the open nature of the gables; however, there was no obvious damage to wood roof joists.

### **Structural Findings & Conclusions**

This building is in good structural condition, once again due to the fact that it is constructed of durable masonry materials (Photo S-6). There is evidence of insect infiltration (i.e., a wasp nest in the southeast corner of the roof framing) due to the open nature of the gables; however, there was no obvious damage to wood roof joists.

### **Auto Vehicle Shop**

#### **Findings & Conclusions**

This building is in good structural condition, with only minor “cosmetic” deficiencies noted. These include a moderate crack in the east section’s floor slab; evidence of minor groundwater infiltration and efflorescence on the inside face of the east retaining wall; a severe corner spall of the exterior brick façade; missing/deteriorated joint material between the exterior apron slabs and the building column piers; and delaminated exterior wood veneer above the maintenance bay doors.

This building is in good structural condition, with only minor “cosmetic” deficiencies noted. These include a moderate crack in the east section’s floor slab (Photo S-7); evidence of minor groundwater infiltration and efflorescence on the inside face of the east retaining wall (Photo S-8); a severe corner spall of the exterior brick façade (Photo S-9); missing/deteriorated joint material between the exterior apron slabs and the building column piers (Photo S-10); and delaminated exterior wood veneer above the maintenance bay doors (Photo S-11).

In general the Mechanical Systems were found in good condition and appeared to function properly during our site inspection. There is an existing backbox from an abandoned panel, which currently serves as a pull box. This box has a hinged, non-lockable cover, which allows potential access to wiring by unauthorized personnel. In general the plumbing systems were found functional and in good condition.

### **Garage**

#### **Findings & Conclusions**

This building is in good structural condition. The only noted structural deficiencies are the deteriorated wood jambs for the roll-up doors, and minor corrosion on the exposed steel column between these doors (Photo S-12). The lighting in this building is adequate.

### **General Storage (i.e., “Howitzer”) Shed**

#### **Findings & Conclusions**

Given its young age, this building is in good to excellent condition with the only noted structural deficiencies associated with its exterior metal panel veneer: a loose/detached trim piece at the base of the southeast corner (Photo S-13); and damaged portions along the south wall due to obvious (but minor) vehicular impact (Photo S-14). The electrical equipment and lighting in this building are in good condition.

#### **IV. RECOMMENDATIONS**

As noted, all five of the buildings are in good structural condition with only minor deficiencies noted. Most of these deficiencies are “cosmetic” in nature and do not necessarily have to be repaired. The others can easily be prioritized and incorporated into a general repair or maintenance program. As such, no specific structural recommendations will be made at this time.

Regarding the potential re-use (or changed use) of the Reserve Training Building, given its previously noted redundant construction and associated inherent strengths, it can be anticipated that very few structural modifications (including code-required strengthening) will be required, regardless of the proposed use. For example, given the fact that the floor framing system is currently supporting office space, which requires a rather high live load capacity of 100 PSF, it is doubtful that any other reasonable use of this space will exceed this capacity. It should be noted that building additions, select demolition, and/or other significant building changes most likely will require structural modifications. Possible examples of this would include elevator retrofits, an entrance canopy, creation of open interior spaces by wall and slab removals, etc.

##### **Mechanical Recommendations**

Replace base mounted hot water pumps P-1 and P-2 and associated chemical feed pot system located within Boiler Room, replace horizontal unit heaters and panel wall exhaust fans located with the Gun Room, replace ceiling mounted hot water horizontal unit ventilators and roof-top pressure relief hood located within the Gym.

##### **Electrical Recommendations**

We recommend replacing the high pressure sodium lights in the Gym with a T5 fluorescent high bay if the space is to be used frequently during evening hours.

The wall-mounted emergency battery lighting units are in poor condition. If the integral emergency batteries were not installed as in the corridor lights, as shown on the 2001 plans, then the amount of emergency lighting provided by the wall-mounted units will be inadequate to meet current requirements.

Update emergency lighting throughout building if upon verification of battery units.

In conjunction with the recommended replacement of boiler and controls by HVAC contractor, install new starters, disconnect switches and panel board to replace outdated boiler room equipment.

Depending on the future occupancy of the building, it may become necessary to provide additional strobe lights to augment the existing fire alarm system.

In the Auto Vehicle Shop, we recommend that the panel which currently serves as a pull box be replaced with an enclosed junction box. We also recommend replacing the high pressure sodium lights with energy efficient fluorescent lights of the building will be occupied and used daily. If it used as storage, the existing lights will suffice.

##### **Plumbing Recommendations**

Replace all above ground sanitary and domestic piping systems, replace all out-of-date non-efficient and non A.D.A. compliant plumbing fixtures. Provide a new complete domestic hot water piping distribution system and hot water heaters.



This facility is being considered for several uses once it is decommissioned as a Reserve Center, some of which include use as a shelter, a school, outpatient services center, or hospital use. A preliminary code assessment follows, outlining some of the Pennsylvania Uniform Code issues for each of these general use categories.

## **PA-UCC ISSUES**

### **1. Shelter for Homeless, Women's Shelter:**

- a. Occupancy Type:
  - i. R-1 (2006 IBC designation), Boarding House, Transient.
  - ii. OR - R-2, Dormitory or Boarding House Non-Transient.
- b. Assume mixed occupancy, separated (fire separation of different occupancies such as Lobby-Business area will be separated by fire barrier from residential occupancy).
- c. Quick response sprinkler required (903.2.7)
  - i. 13R system where allowed.
- d. Smoke alarms required [907.2.10]
- e. 1-hour separation between rooms (or ½ hour in IIB, IIIB or VB)
- f. Attic draftstopping above every two sleeping units but not more than 3000sf
- g. Assumed construction type: IIIB, building area limitation 16,000sf. If greater, then fire wall can separate areas.
- h. Accessible dwelling and sleeping units based on total number provided, e.g. with 1 to 25 units, only one is required to be accessible.
- i. Existing Building – Renovations, Change of Occupancy (Section 3406, 2006IBC):
  - i. (3401.3) ...comply with requirements of 2006 IFC, IMC, IPC and ICC International Electrical Code for the new occupancy.
  - ii. (3406.1) ...comply with requirements of 2006IBC for the new occupancy.
  - iii. (3409.4) ...[change of occupancy – accessibility compliance]...
    1. At least one accessible entrance
    2. At least one accessible route from an accessible building entrance to primary function areas
    3. Signage complying with section 1110 [Accessibility]
    4. Accessible parking where parking is being provided
    5. At least one accessible passenger loading zone (when loading zones are provided)
    6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.
    7. [to extent technically feasible]
- j. Energy Conservation Code: Change in Occupancy (101.4.4), " ...resulting in increase in demand for either fossil fuel or electrical energy shall comply with this code."

### **2. School/Education (Adult)/Outpatient-clinic Use (If classified as type B\*):**

- a. Occupancy Type:
  - i. B (Section 304, 2006 IBC), Business Group, Educational Occupancies for Students above the 12<sup>th</sup> grade and outpatient-clinic use.
- b. Assume mixed occupancy, separated (for example, Business or Education area will be separated by fire barrier from Assembly occupancy).

- c. Sprinkler not required (Section 903) unless certain limitations for Assembly (lecture hall) are exceeded (300 persons, 12,000sf).
- d. Fire alarm not required (unless city ordinance specifically requires it, or if sprinklers required)
- e. Assumed construction type: IIIB, building area limitation 19,000sf (B use only, but if Assembly use included, then most stringent, or 9,500sf).
- f. Accessibility, Existing Building – Renovations only and no change of occupancy (Chapter 34, 2006IBC). Assume that the existing use is ‘B’:
  - i. (3401.3) ...comply with requirements of 2006 IFC, IMC, IPC and ICC International Electrical Code for the new occupancy.
  - ii. (3406.1) ...comply with requirements of 2006IBC for occupancy.
  - iii. (3409.4) ...[change of occupancy - accessibility]...
    - 1. At least one accessible entrance
    - 2. At least one accessible route from an accessible building entrance to primary function areas
    - 3. Signage complying with section 1110 [Accessibility]
    - 4. Accessible parking where parking is being provided
    - 5. At least one accessible passenger loading zone (when loading zones are provided)
    - 6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.
    - 7. [to extent technically feasible]
- g. Energy Conservation Code: Change in Occupancy (101.4.4), ” ...resulting in increase in demand for either fossil fuel or electrical energy shall comply with this code.”

\* See following paragraphs for School/Education Use classified as ‘E.’

### 3. **School/Education Use (E):**

- a. Occupancy Type:
  - i. E (Section 304, 2006 IBC), Educational Group, Educational purposes through the 12<sup>th</sup> grade.
- b. Assume mixed occupancy, separated (fire separation of different occupancies such as Education area will be separated by fire barrier from Assembly occupancy).
- c. Sprinklers required only above 20,000sf building area (all Group E) and 12,000sf (or 300 persons, Group A3)
- d. Assumed construction type: IIIB, building area limitation 14,500sf\* (but limitation is 9,500sf if A-3, Lecture Hall occupancy is added). Note: this does not include increase for sprinklers.
- e. Existing Building – Renovations, Change of Occupancy (Chapter 34, 2006IBC):
  - i. (3401.3) ...comply with requirements of 2006 IFC, IMC, IPC and ICC International Electrical Code for the new occupancy.
  - ii. (3406.1) ...comply with requirements of 2006IBC for occupancy.
  - iii. (3409.4) ...[change of occupancy - accessibility]...
    - 1. At least one accessible entrance
    - 2. At least one accessible route from an accessible building entrance to primary function areas
    - 3. Signage complying with section 1110 [Accessibility]
    - 4. Accessible parking where parking is being provided

5. At least one accessible passenger loading zone (when loading zones are provided)
  6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.
  7. [to extent technically feasible]
- f. Energy Conservation Code: Change in Occupancy (101.4.4), ” ...resulting in increase in demand for either fossil fuel or electrical energy shall comply with this code.”

\*Area increase for frontage (open exterior) can raise the table limit from 14,500 to 20,000.

**4. Hospital Use (I-2, IBC and “Healthcare,” NFPA 101):**

- a. Inspection and Review by Department of Health in addition to local PA-UCC rules. DOH rules are NFPA 101 (2000) and AIA 2006 Guidelines for Design and Construction of Healthcare Facilities.
- b. NFPA 101: Section 4.6.12, Change of Occupancy.
  - i. Conform to rules for new construction.
  - ii. Assume that mechanical and electrical systems will need major overhaul.
- c. Occupancy Type:
  - i. I-2 (Section 304, 2006 IBC), Hospitals, 24-hr basis for care.
  - ii. Healthcare: Hospitals, limited care facilities, nursing homes.
- d. Assume mixed occupancy, separated (fire separation of different occupancies such as Business area will be separated by fire barrier from I-2 occupancy).
- e. Automatic fire detection and smoke alarms required [407.2, 407.6]
- f. Smoke compartments required with smoke barrier and refuge areas [407.4.1].
- g. 1-hour separation between rooms.
- h. Assumed construction type: If IIIA, building area limitation 12,000sf , if type VA, area limitation 9,500sf (sprinkler increase not included)
- i. Existing Building – Renovations, Change of Occupancy (Chapter 34, 2006IBC):
  - i. (3401.3) ...comply with requirements of 2006 IFC, IMC, IPC and ICC International Electrical Code for the new occupancy.
  - ii. (3406.1) ...comply with requirements of 2006IBC for occupancy.
  - iii. (3409.4) ...[change of occupancy - accessibility]...
    1. At least one accessible entrance
    2. At least one accessible route from an accessible building entrance to primary function areas
    3. Signage complying with section 1110 [Accessibility]
    4. Accessible parking where parking is being provided
    5. At least one accessible passenger loading zone (when loading zones are provided)
    6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.
    7. [to extent technically feasible]

Energy Conservation Code: Change in Occupancy (101.4.4), ” ...resulting in increase in demand for either fossil fuel or electrical energy shall comply with this code.”

**Appendix A:**

**“Cultural Resources Survey and Assessment  
Of Naval Reserve Centers” (CRSA)**



**Appendix B:**

**Floor Plans & Exterior Elevations**

**Appendix C:**

**Photographs**